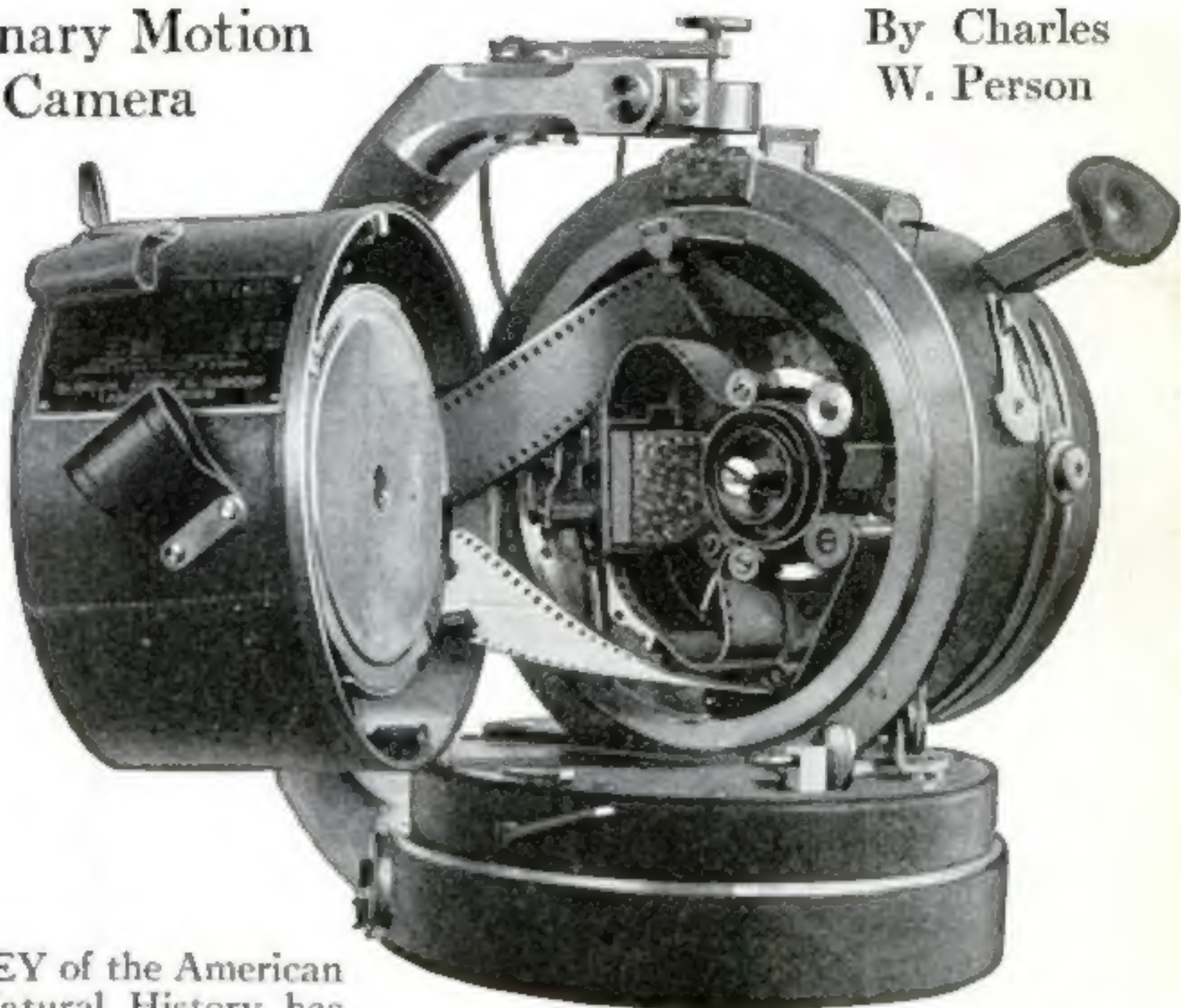


As Easily Handled as a Rifle

A Revolutionary Motion Picture Camera

By Charles
W. Person

The camera opened to reveal the interior arrangement. The film box for the storage of the negative is shown at the left and the film leads from it to the exposing or camera mechanism opposite. To operate the camera the two parts are locked together to form a compact unit



CARL E. AKELEY of the American Museum of Natural History has evolved a motion-picture camera so novel in its constructional and operating features that it gives promise of revolutionizing at least one of the diversified fields of motion-picture photography—that of the naturalist and big game hunter. It is the first motion-picture camera equipped with the necessary mechanism to enable it to enter the hitherto unexplored realm of the hand or still camera and thus place within the scope of the operator all the vast possibilities of quick action and instantaneous photography.

It is only natural that Mr. Akeley should accomplish something permanently valuable in motion-picture photography, since his wide experience as explorer and inventor has enabled him to discover at first hand the many limits and inherent deficiencies of the modern apparatus. As an inventor he is identified with the cement-gun and with many accessories to the hunter's craft, but he is perhaps best known as the man who has elevated taxidermy from the upholstery trade into an art. Many animals which form the most valuable

exhibits in our museums he has hunted and killed in their native haunts, sculpturing their bodies in clay before he covers them with their own skins.

As a hunter of big game in the wilds of Africa he has used the ordinary motion-picture camera, to find it deficient and even useless. He has attempted time and time again, and at risk of great personal danger, to photograph a herd of charging elephants, or an alligator stealing on its prey, or a trapped lion in its death throes, only to be disappointed in the finished film. He once had the rare opportunity to photograph a real battle between giant ants of the tropics, but before he could adjust the intricate mechanism of the camera and set it up it was too late. It was disappointments like these that stimulated him to concentrate his technical knowledge on plans for a new camera.

There are parts of the Akeley camera which have yet to be named—they are so new. Indeed, the instrument is such a radical departure from the newest of the old-style machines, that it has few features in common with them. Primar-

ily it was constructed to enable the operator, under all conditions, to take a picture in a minimum of time. To be exact, it can be mounted and trained on an object in thirty seconds, which is a feat impossible with the old-style apparatus. Furthermore, it can be rotated either in a horizontal or a vertical position, and it can take panoramic pictures at any rate of speed desired. These are only two of many important features which show the versatility of the machine.

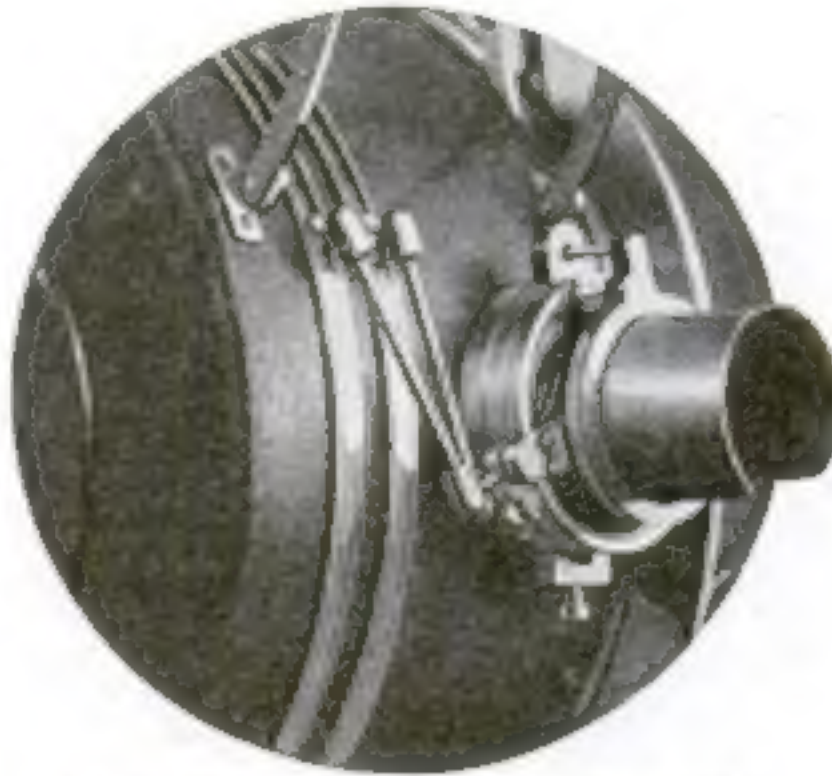
The ordinary motion-picture camera is limited in operation to an angle of forty-five degrees above or below the horizontal. It must be used on a tripod, carefully leveled. In taking pano-

ramic pictures, two cranks, one for the horizontal movement, and the other for the perpendicular movement, must be turned simultaneously, either forward or backward, according to the direction of the swing required. Moreover, the panoramic action is confined to rectangular movements.

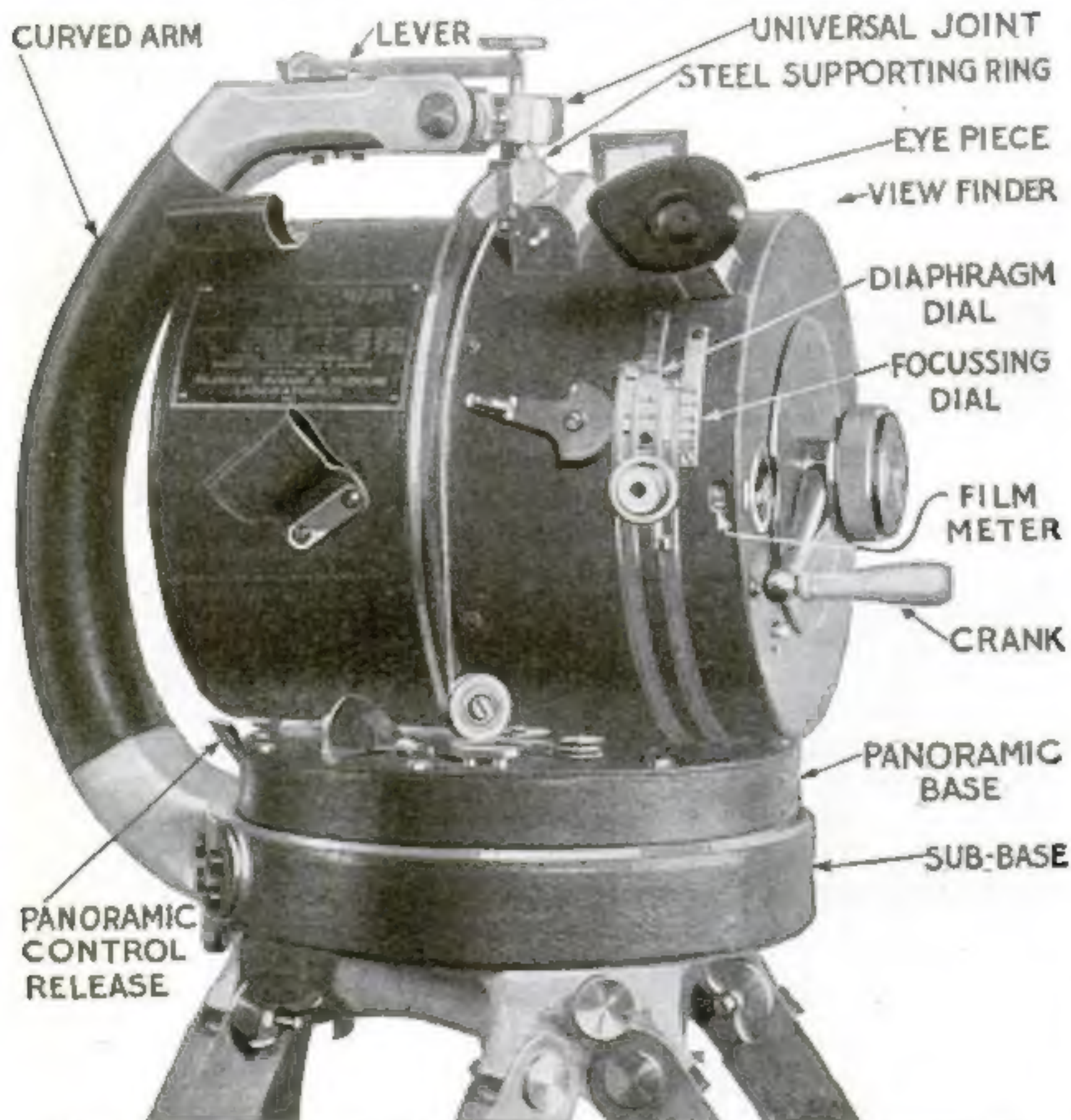
Other restrictions are the awkward lens adjustments; the friction of the film, which causes static electricity; excessive noise, making the machine impracticable for nature and wild animal photography; its bulkiness and weight; the long time required to assemble it and prepare it for operation; the lack of climate-resisting qualities; the numerous loose parts and accessories, and other handicaps too numerous to mention here.

The camera invented by Mr. Akeley overcomes these imperfections with a mechanism entirely new. In form his camera is cylindrical. It rotates in a steel ring on ball-bearings and is supported by a curved arm, which rises from a sub-base on which the panoramic-base rests when in operation. The complete apparatus, camera and panoramic devices, form a single compact unit to be used with or without a tripod.

By merely pressing the lever at the top of the



The lens and diaphragm mechanism which is automatically operated from the rear



By guiding pressure of the left hand the instrument moves on its sub-base and is trained in any direction at the will of the operator

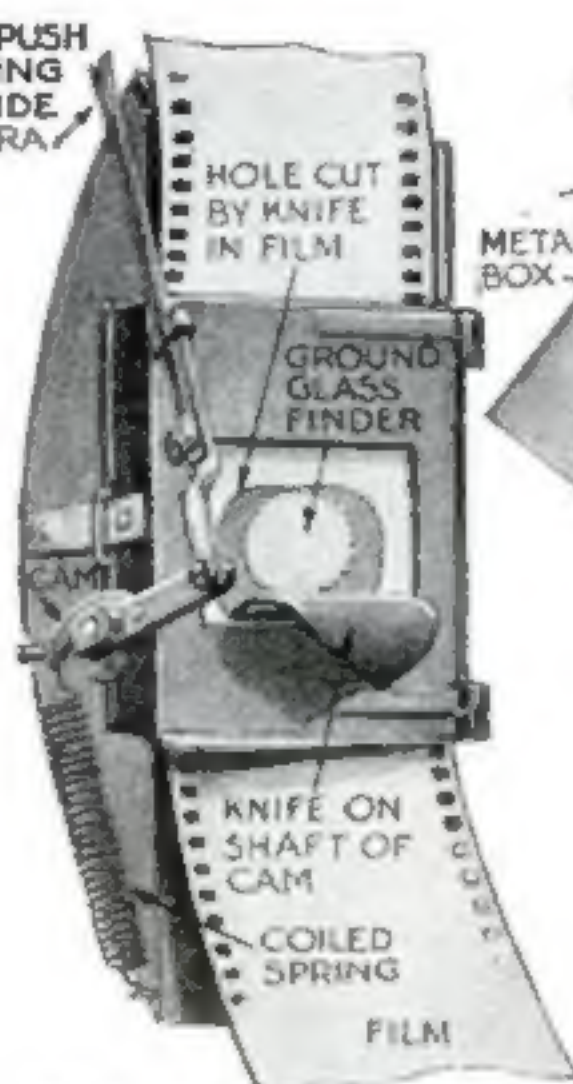
Details of a Remarkable Motion-Picture Camera

The Film Cutter

Five features distinguish Carl Akeley's camera from all existing apparatus. The film cutter shown at the right is used to cut a hole in the film to indicate to the developer when a given series has come to an end. The hole is also used as an aperture through which the operator can stop the machine, puncture the film, and then focus to a dead accuracy on a ground glass. Consequently, when the film is developed the perforation notifies the operator exactly where the stop was made. The cutter is actuated by a pull and push rod leading to the outside of the camera. One push of the rod cuts a hole in the film and brings the ground glass into position. An eye-piece attached to the film cutter enables the operator to locate the image on the ground glass and regulate the focussing and diaphragm dials

Carl Akeley's Wonderful Invention

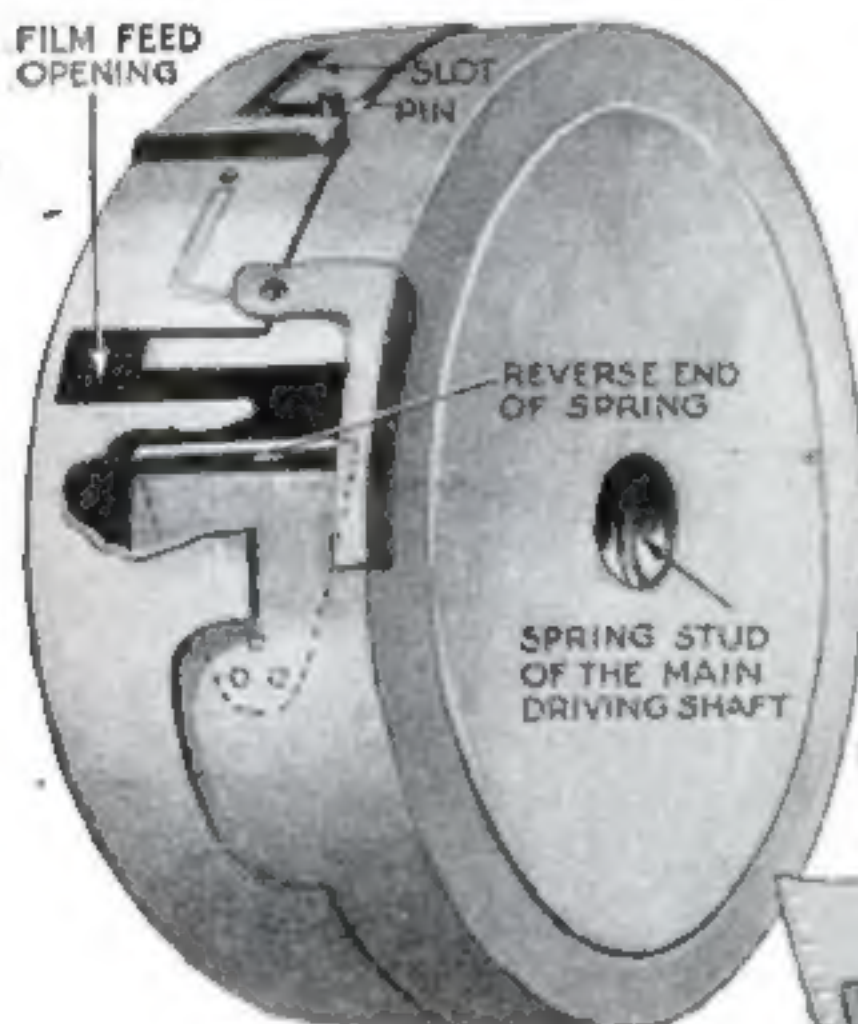
PULL AND PUSH ROD LEADING TO OUTSIDE OF CAMERA



THE FILM CUTTER AND GROUND GLASS PLATE

Getting Rid of the Flicker

The finger mechanism illustrated below controls the speed and feed of the film. As the main shaft revolves the eccentric bearing operates the finger, which passes through a slot in the film guide and engages the perforations of the film. As the main shaft turns, the finger is inserted in the film

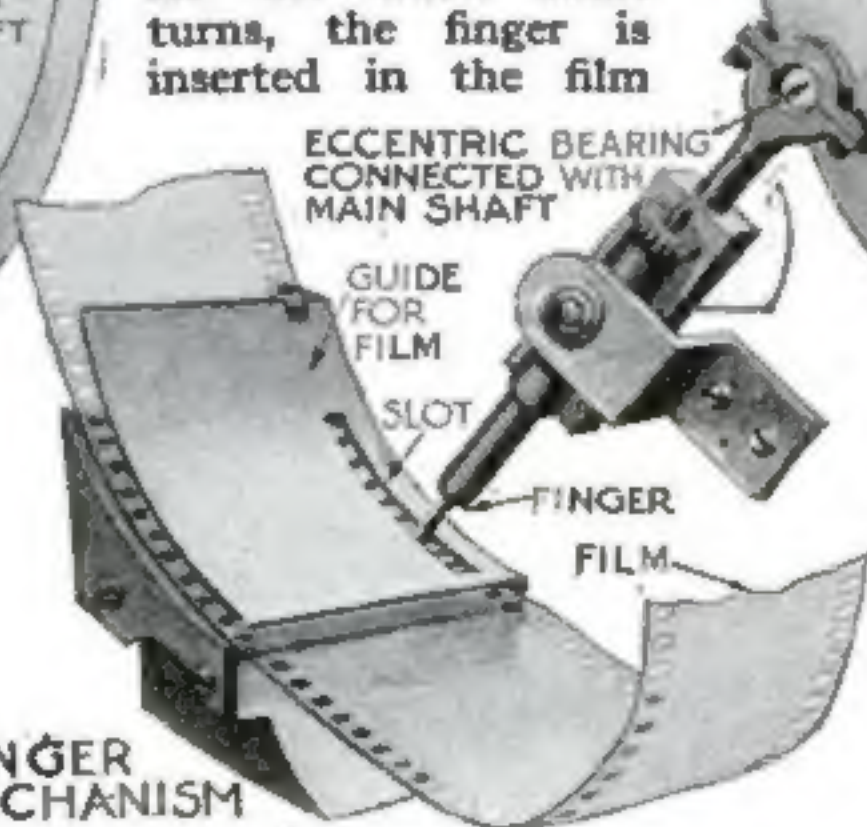


FILM BOX

Eliminating Friction of the Film

The film box, as shown above, consists of two telescoping shells which are locked together by a pin and slot device. The inner shell has a spring with a roller end over which the film feeds out. This roller end serves to eliminate friction and also prevents scratching while taking pictures. The spring stud of the main driving shaft locks the film box with the driving gears, which in turn rotate the film at the speed set by the operator

FINGER MECHANISM

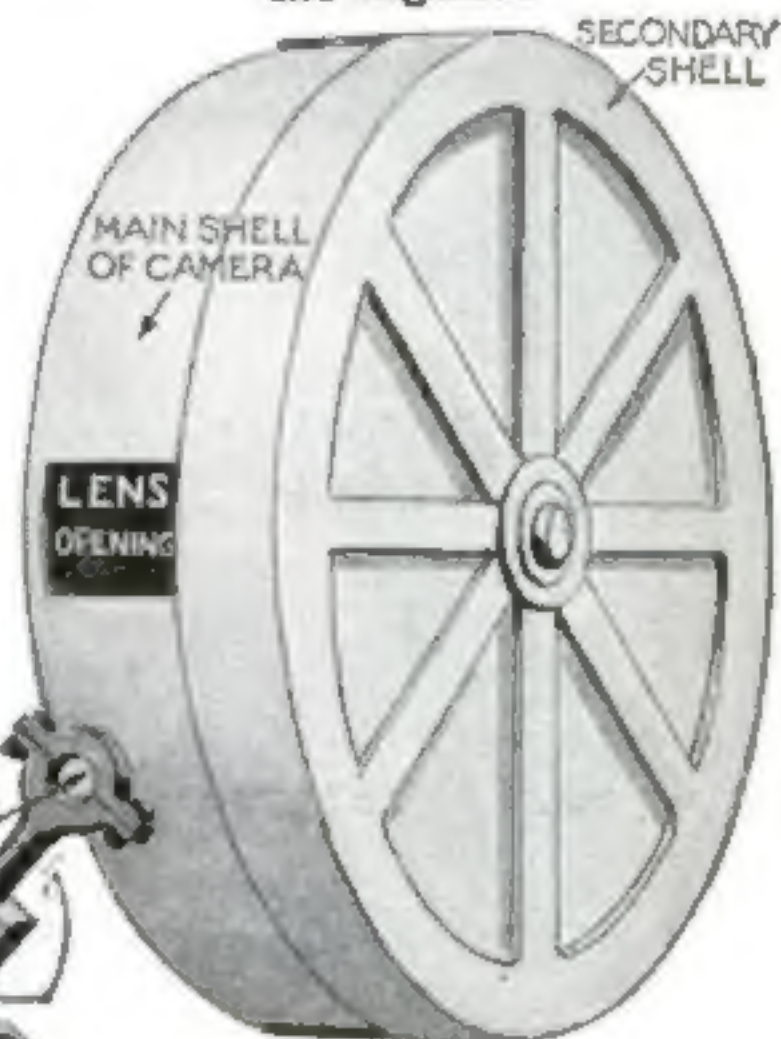


perforations and withdrawn from them one by one so that the film is literally picked along. This gives a uniform movement and entirely eliminates all "jerkiness"



Seeing the Image

The eye-piece, as shown above, enables the photographer to see the actual image being recorded on the negative—something hitherto unheard of. It consists of a square metal box with a sliding end fitted with a light-proof, black velvet rim for the eye. A spring which serves to lift the eye-piece up and which closes the finding aperture by a metal stop at the same time, is pressed down when the eye rests against the rim. This gives the photographer an unobstructed view of the image falling on the negative



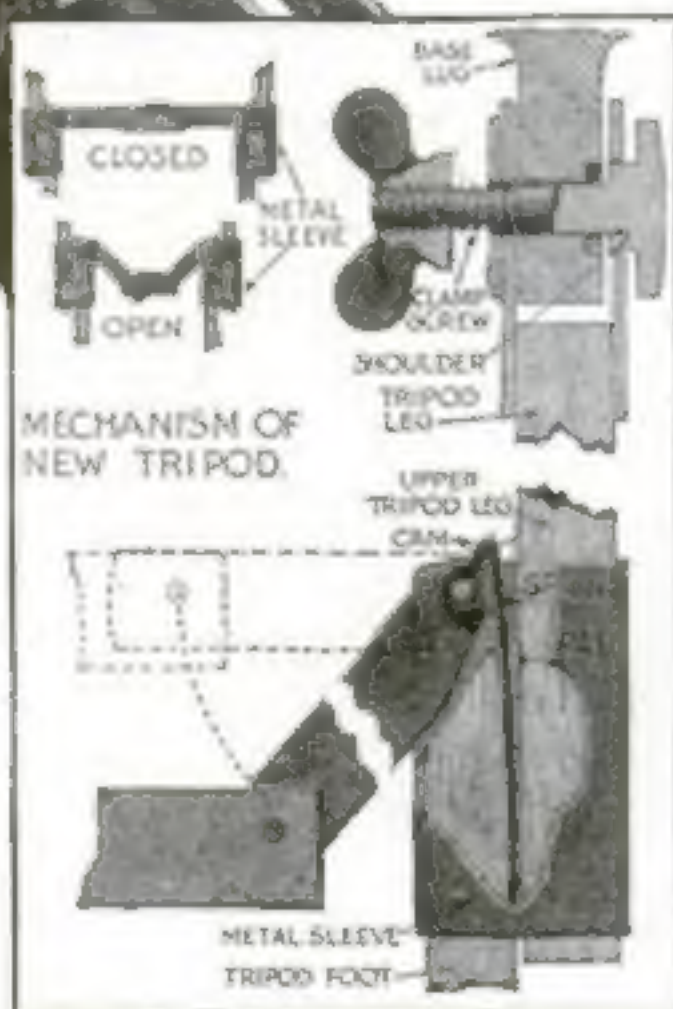
SHUTTER 1/2 CIRCUMFERENCE OF CAMERA

How the Shutter Works

The shutter, illustrated above, consists of the main or outer shell of the camera containing the lens opening and a secondary shell half cut away, this latter being the shutter proper. As the secondary shell revolves over the main shell the lens opening is alternately closed and shut by that portion of the secondary shutter which has not been cut away. The exposure efficiency is increased to eighty-five per cent



Above, focussing straight down. As shown at the right, each foot-member of the tripod is attached to a sleeve, the inner end of which is a swinging cam bearing upon a spring attached to the tripod leg. The spring has a felt pad which locks the tripod members together by friction, the lever system (shown closed and open) being used



supporting arm the camera automatically levels itself and upon releasing the lever remains rigidly in that position. Without requiring any previous adjustment or setting, as is the case with the cameras generally used, it can be quickly adapted to any kind of panoramic view to be taken. A horizontal panoramic adjustment may be readily changed to a vertical adjustment and vice versa, while by manipulating the finger-piece the direction of rotation and the speed at which such rotation takes place may be adapted to prevailing conditions in a quick and reliable manner.

The camera can be mounted in the twinkling of an eye for rapid picture-taking. It can be trained in any direction as accurately and as quickly as a cowboy can draw a gun. If a tripod is not at hand a window-sill, a rock, a saddle-horn, a tree-branch, a knee—in fact, anything stationary may serve as a base for operations.

Where quick action is absolutely imperative, the newspaper photographer can film every stage of an exciting fire rescue, or a riot, or a sinking ship, or an explosion, or a shooting, or, indeed, anything heretofore solely within the compass of the hand or still camera.

The lens adjustments, instead of being in front, are in the rear, so that focussing through a diaphragm according to light conditions may be carried on while the picture is being taken. By means of an ingenious eye-piece the actual image on the film may be observed during the process of exposure. To appreciate the importance of this, it may be said that it never has been accomplished before in either still or motion cameras. The eye-piece remains closed until the eye is pressed against a light-proof, black velvet rim; the actual image being recorded on the negative is seen.

It is impossible to turn the camera so rapidly in any direction that a blur is produced. The range of tilting and "panoraming" permits the operator to turn his lens straight up or straight down beneath the camera itself. This enables the operator to photograph an ant hill or nest one moment and a Zeppelin the next. All friction danger is eliminated so that the film can not be scratched while taking pictures. The camera complete weighs thirty pounds; the old-style apparatus weighs from fifty to seventy-five pounds.

The film-containing box has very little in common with the boxes now used. The camera may be run at the standard speed of sixteen pictures a second, or the speed may be doubled or trebled, as desired.